

Linear Programming HW16 (3.5)

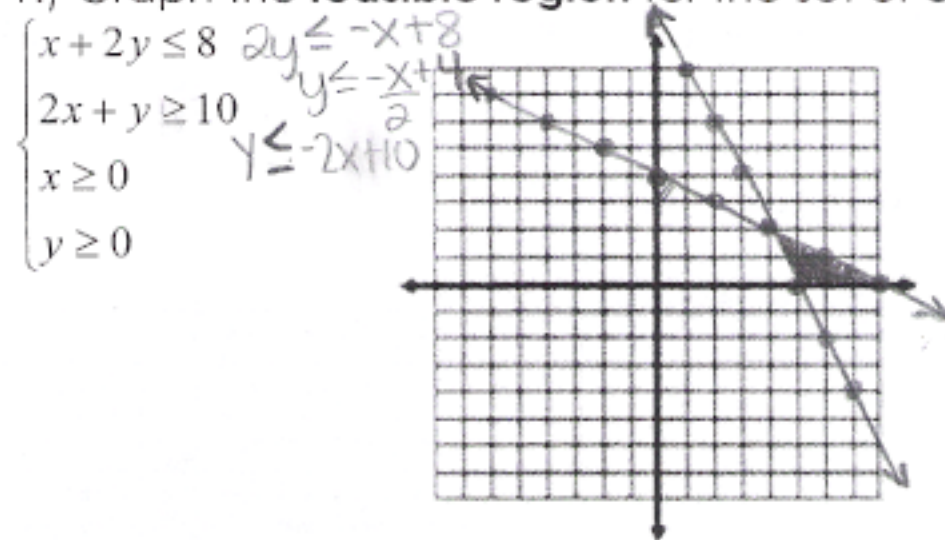
I will be able to use inequalities to find maximums and minimums.

Key

Name

Per

1.) Graph the **feasible region** for the set of **constraints**.



2.) What are the **vertices** for the **feasible region** you just graphed?

(4, 2) (5, 0) (8, 0)

3.) The **feasible region** for a set of **constraints** has **vertices** at (-2, 0) (3, 3) (6, 2) and (5, 1). Using these, find the **minimum** and **maximum** values for each **objective function**.

a.) $M = 3y - x$

$$M = 3(0) - (-2) = 2$$

$$M = 3(3) - 3 = 6 \text{ max}$$

$$M = 3(2) - 6 = 0$$

$$M = 3(1) - 5 = -2 \text{ min}$$

b.) $P = 3x + 2.5y$

$$P = 3(-2) + 2.5(0) = -6 \text{ minimum}$$

$$P = 3(3) + 2.5(3) = 16.5$$

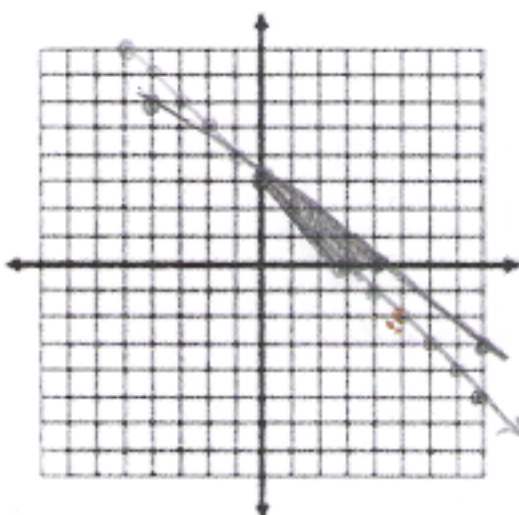
$$P = 3(6) + 2.5(2) = 23 \text{ maximum}$$

$$P = 3(5) + 2.5(1) = 17.5$$

4.) Find the **minimum** and **maximum** value of each **objective function** given the **constraints**.

$P = 3x + y$

$$\begin{cases} x+y \geq 3 & y \geq -x+3 \\ 3x+4y \leq 12 & 4y \leq -3x+12 \\ x \geq 0 & y \leq -\frac{3}{4}x+3 \\ y \geq 0 & \end{cases}$$



vertices: (0, 3) (3, 0) (4, 0)

$$P = 3(0) + 3 = 3 \text{ min}$$

$$P = 3(3) + 0 = 9$$

$$P = 3(4) + 0 = 12 \text{ max}$$